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First documented records of Black-throated Flower-piercer, *Diglossa brunneiventris* (Lafresnaye, 1846) (Aves, Thraupidae), and Least Tern, *Sternula antillarum* (Lesson, 1847) (Aves, Laridae), on the southern coast of Peru

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Abstract

We report Black-throated Flower-piercer, *Diglossa brunneiventris* (Lafresnaye, 1846), and Least Tern, *Sternula antillarum* (Lesson, 1847), in the Tambo river estuary, Islay province, Arequipa department, Peru. Both species are newly documented from the southern coast of Peru. It is probable that *D. brunneiventris* has descended from the higher, inland portion of the Tambo river basin to the estuary. *Sternula antillarum* is considered a frequent visitor to the South American Pacific coast.

Keywords

Arequipa, estuary, new records, *Sterna antillarum*, Tambo River, Santuario Nacional Lagunas de Mejía, Pacific coast

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Introduction

Black-throated Flower-piercer, *Diglossa brunneiventris* (Lafresnaye, 1846), is a small (12–13 cm) passerine (Fjeldså and Krabbe 1990; Schulenberg et al. 2010), with two recognized subspecies, *D. b. vuilleumieri* (Graves, 1980), which is restricted to Antioquia, Colombia, and *D. b. brunneiventris* (Lafresnaye, 1846), which occurs along both the eastern and western slopes of the Andes from 2400 to 4300 m a.s.l. (Schulenberg et al. 2010; Del Hoyo et al. 2011). In Peru, *D. brunneiventris* inhabits northern Cajamarca to eastern Puno and Tacna (Fjeldså and Krabbe 1990). This resident species is found in a wide variety of habitats, such as dry scrub, gorges with *Gynoxys* bushes, *Polylepis* forests, agricultural fields, and *Eucalyptus* plantations (Fjeldså and Krabbe 1990; Del Hoyo et al. 2011; Walker 2015). This species feeds on nectar by piercing the corollas of flowers (Bock 1985) and on insects found in trees (Walker 2015).

Least Tern, *Sternula antillarum* (Lesson, 1847), is a

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small tern measuring 21–24 cm (Del Hoyo et al. 1996; Schulenberg et al. 2010). Three subspecies are recognized: *S. a. antillarum* (Lesson, 1847) occurs from the eastern United States of America to northern Venezuela and Brazil; *S. a. athalassos* (Burleigh & Lowery, 1942) occurs from central North America south to northern Brazil; and *S. a. browni* (Mearns, 1916) ranges from California to southern Mexico (Del Hoyo et al. 1996). In Peru, this species is a rare boreal migrant (Schulenberg et al. 2010), and some individuals are considered vagrant (Plenge 2020). It inhabits lakes, estuaries, rivers, and sandy coasts, where it feeds on fresh and saltwater fish in shallow water. This species can also feed on small insects and crustaceans (Del Hoyo et al. 1996). Herein, we report the first records of *D. brunneiventris* and *S. antillarum* on the southern coast of Peru (Fig. 1).

Methods

Both species were recorded during the fieldwork of the project "Aves de la desembocadura del río Tambo" within the Santuario Nacional Lagunas de Mejía, which preserves native riparian vegetation, sandy beaches, and the estuary of Tambo River. The sanctuary is surrounded by large expanses of agricultural fields. We used 1 km linear transects in both estuary and beach areas, complemented by mist netting (12 m; $n = 6$) in areas with riparian vegetation. Both methods were applied twice a day in the mornings (06:00–09:00 h) and in the afternoon (15:00–17:00 h). Surveys were made twice per month, from September to October 2017 and from January to February 2018.

Results

***Diglossa brunneiventris* (Lafresnaye, 1846)**
Black-throated Flower-piercer
Figure 2

New records. PERU • Arequipa department, Islay province, Punta de Bombón district, Tambo river estuary; 17°10′07″S, 071°50′10″W; 12 m a.s.l; 28 Jan. 2018 at 16:38 h; Y.A. Peña leg.; 1 immature individual.

Identification. The species was recognized by hooked tip of the bill, rufous chestnut underparts, and light-gray flanks and black upperparts (Fjeldså and Krabbe 1990; Schulenberg et al. 2010). The bill is distinct from other species of Thraupidae, and *D. brunneiventris* is the only species of *Diglossa* that occurs on the western slopes of the Andes to southern Peru (Schulenberg et al. 2010). We identified the individual as an immature by the presence of preformative plumage, due to the brown coloration of the flight feathers which had noticeable wear (Kennedy et al. 2018). We noticed the absence of molt in body and flight feathers. We took the following measurements: wing length 61 mm; tail length 49 mm; tarsus

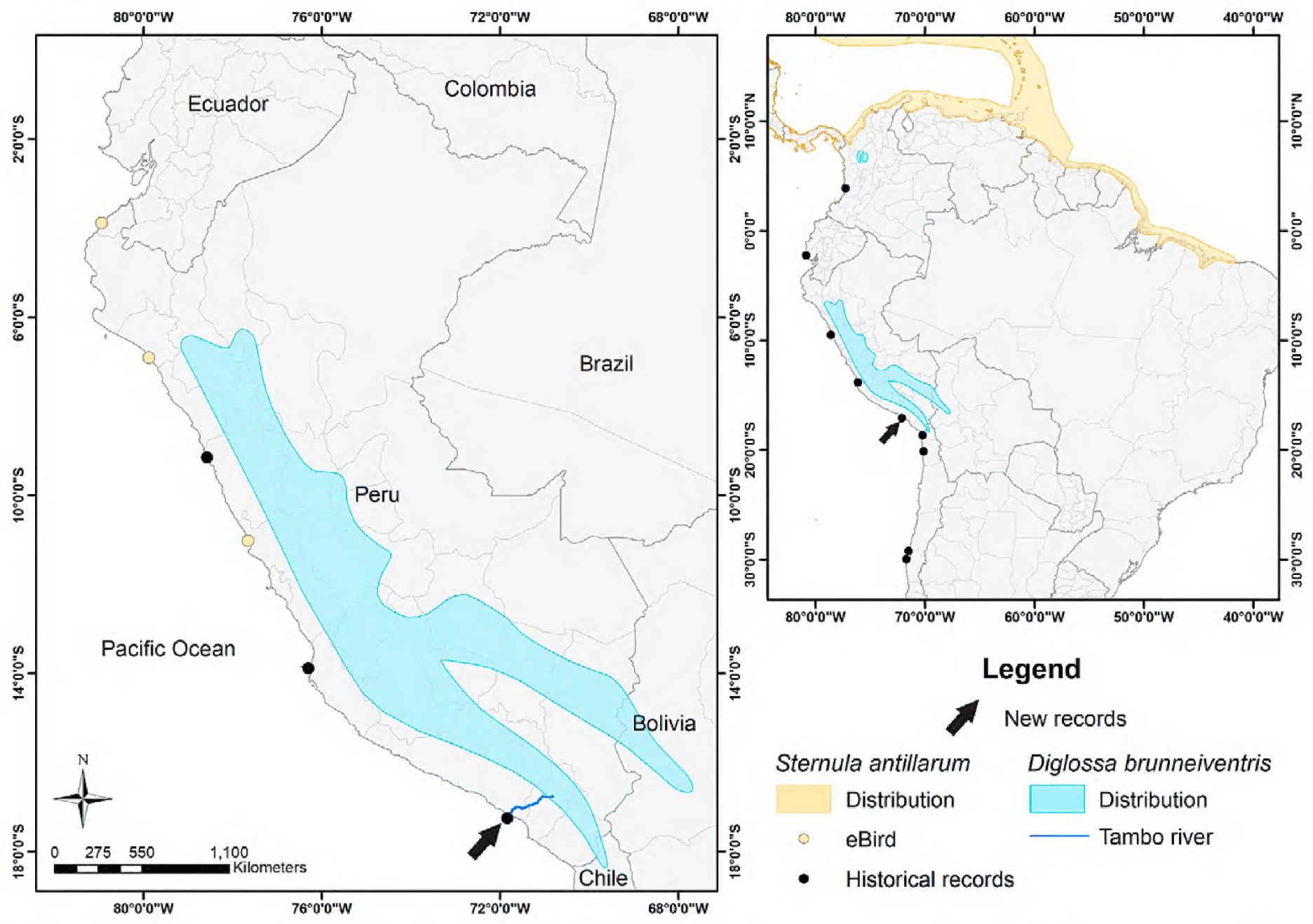

Figure 1. *Diglossa brunneiventris* and *Sternula antillarum* distribution map. Distribution areas obtained from BirdLife International (2016a, 2016b); historical records and eBird records. The black arrow indicates our documented records. Map design: L. Cano.

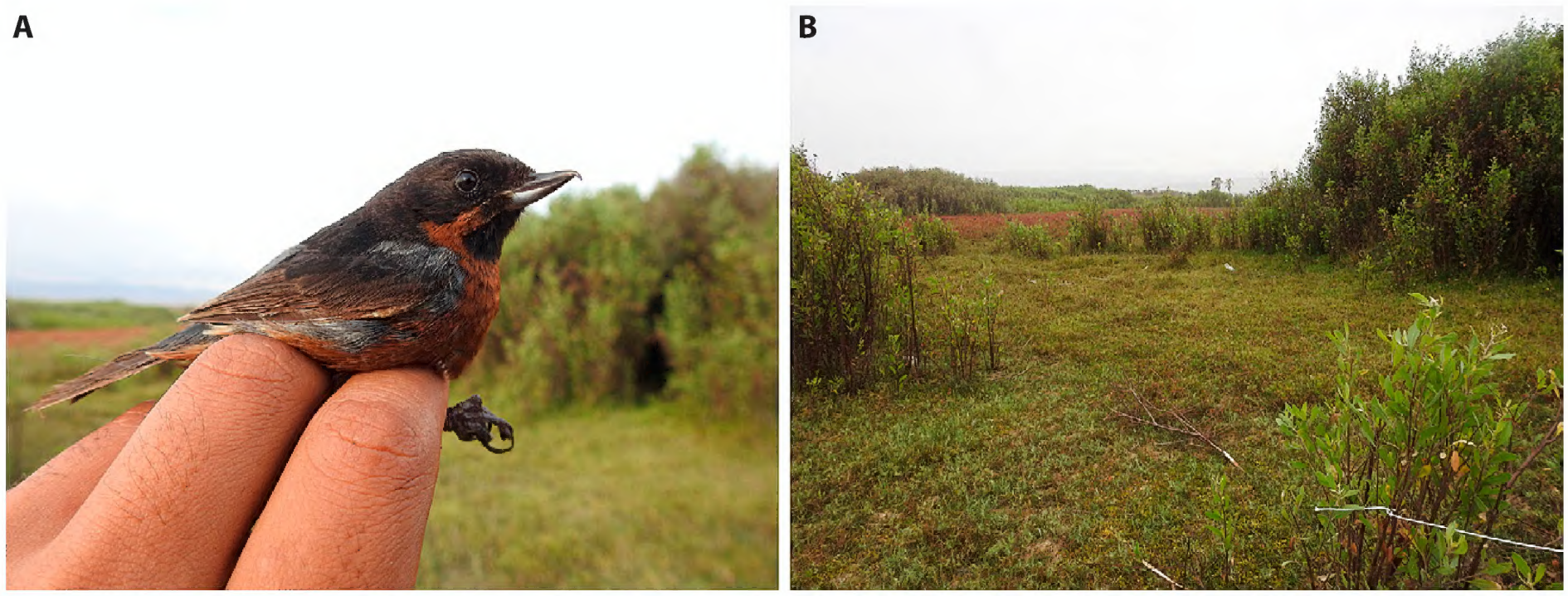

Figure 2. A. *Diglossa brunneiventris*, immature individual captured in Santuario Nacional Lagunas de Mejía. **B.** Riparian vegetation composed of *Tessaria integrifolia* and *Baccharis salicifolia*.

length 21.4 mm, and bill length (from the nostrils) 8 mm. We were not able to determine the sex of the bird, as this species does not present sexual dimorphism (Kennedy et al. 2018).

Remarks. This site is dominated by 3-m high riparian vegetation, including *Tessaria integrifolia* (Ruiz & Pav.) and *Baccharis salicifolia* (Ruiz & Pav.) Pers. (both Asteraceae) (Fig. 2).

***Sternula antillarum* (Lesson, 1847)**
Least Tern
Figure 3

New records. PERU • Arequipa department, Islay province, Punta de Bombón district; Tambo river estuary; 17°10′13″S, 071°50′18″W; 8 m a.s.l; 2 Sep. 2017 at 07:39 h; J. Ramírez and Y. Ferrandiz leg.; 1 adult. • Arequipa department, Islay province; Punta de Bombón district, Tambo river estuary; 17°10′25″S, 071°50′09″W; 5 m a.s.l; 2 Sep. 2017 at 08:11 h; L.G. Cano and Y.A. Peña leg.; 1 adult.

Identification. The individual was identified as a reproductive adult by its ventral white coloration, light-gray upperparts, and yellow bill with black tip (Sibley 2000; Hayes 2001; Schulenberg et al. 2010). It is similar to the reproductive adult of *Sternula lorata* (Philippi & Landbeck, 1861), but the bill is duller yellow and with a dusky culmen and tip (Schulenberg et al. 2010). We were unable to determine the sex of the individual, as this species does not present sexual dimorphism (Magno 1971).

Remarks. In the first observation, the individual was flying steadily and descending towards the water of the Tambo river estuary. After 5 minutes, the bird flew to the open sea, out of sight. The second observation lasted two minutes, during which we saw the bird standing alone 15 m away from us; the individual also flew towards the open sea. It is probable that both sightings were the same individual, as these observations were made on the same day and within 200 m from each other.

Discussion

We present the first record of *Diglossa brunneiventris* for the southern coast of Peru, and specifically, on the coast of Arequipa department. This record contributes to the ornithological knowledge of the Santuario Nacional Lagunas de Mejía and follows the efforts to document

Figure 3. A. *Sternula antillarum,* reproductive adult photographed at the beach. **B.** Tambo river estuary.

the bird diversity in the southern coast of Peru which were initiated 50 years ago by Hughes (1970, 1976, 1979, 1980, 1984, 1985, 1991). Our new record represents the first time that this species has been observed anywhere on the Pacific coast.

Pearson and Plenge (1974) mentioned the possibility of vagrant juveniles wandering from the Andean highlands towards the coast. Juveniles are also known to be are less dominant than adults and are forced to migrate out of reproductive areas (Donázar and Feijóo 2002; Santoja et al. 2019), and this may explain the movement of this species from a inland, higher basin area to the coast.

For *Sternula antillarum*, the first records from Peru were documented by Schulenberg et al. (1987); T. Schulenberg identified two individuals in the Ancash department on 23 November 1978. Subsequently, T. Parker sighted an individual for approximately 10 minutes in the Ica department on 24 May 1980, and R. Hughes saw the first two individuals on the southern coast of Peru in Arequipa department in December 1982.

Hughes (1985) later recorded more individuals in the same region in 1982 and 1983. *Sternula antillarum* has also been reported in the eBird database (eBird 2020) from Lima, Lambayeque, and Tumbes departments. There are also reports from Colombia in Buenaventura Bay (Naranjo 2010) and from Ecuador in the province of Santa Elena (Freile et al. 2019). Reports and confirmed sightings exist from Iquique Port, northern Chile (Barros 2010), and subsequently, this species has been spotted at the mouth of the Lluta river, in the Pachingo and Salinas Grande wetlands (Barros and la Red de observadores de aves 2017, 2018, 2019, 2020). Our observation of *S. antillarum* in the Tambo river estuary is, therefore, the first documented record from Peru's southern coast. We confirm the presence of this species in Arequipa 37 years after Hughes (1985).

Although considered a rare boreal migrant along the South American Pacific coast, *S. antillarum* can extend its stay over the summer (Schulenberg et al. 2010). Therefore, we think this species should be considered a frequent visitor, as the records do not show a strong seasonal pattern along the coast and they can be sighted at various times of the year. It is possible that *S. antillarum* has gone unnoticed due to its similarity to other terns, as there is evidence to show that this species is associated with large groups of *S. lorata* (Schulenberg 1987).

In the lower Tambo river basin, several bird species coming from higher Andean zones have been recorded; these include *Anas puna* (Tschudi, 1844), *Muscisaxicola rufivertex* d'Orbigny & Lafresnaye, 1837, *Fulica gigantea* Eydoux & Souleyet, 1841, *Recurvirostra andina* Philippi & Landbeck, 1861, and *Phoenicoparrus andinus* (Philippi, 1854) (Hogsas et al. 2010), *Cinclodes atacamensis* (Philippi, 1857) (Ugarte and Molina 2016). There are also Amazonian species, such as *Jabiru mycteria* (Lichtenstein, 1819), *Charadrius alticola* (Berlepsch & Stolzmann, 1902) (Hughes 1970, 1976, 1980, 1984, 1991), *Phaetusa simplex* (Gmelin, 1789) (Luque and Tejeda 2013), and birds from unusual provenances such as *Sterna trudeaui* Audubon, 1838, and *Fregata magnificens* Mathews, 1914 (Hughes 1991), among others. The Santuario Nacional Lagunas de Mejia protects part of the lower basin of Tambo River and is a nationally and internationally recognized coastal wetland which offers refuge to resident and migrant birds (SERNANP 2020). Its diverse habitats may also provide sufficient food resources and favourable conditions for wandering species. More research is needed to support this hypothesis.

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Authors' Contributions

YP, LC and RM identified the species, wrote the manuscript and approved it; AC revised and also approved it; LC designed the map.

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